IC71 ATLAS CSC Preamplifier/Shaper Preliminary Test Report

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DC Parameters:

Bias Voltages:

BIAS	Simulated	Measured
b2_amp1	0.6864	0.6975
b5_amp2	1.7983	1.8237
b5_amp3	1.786	1.7676
b2_dr	2.3567	2.4211
b1_dr	0.7379	0.7427
b7_amp3	1.048	1.1104
b1_dcs	1.362	1.4953
b3_amp2	1.2878	1.3177
b1_rst	1.8129	1.9055
b4_amp1	0	0
b3_amp1	0.839	0.8437
b7_amp2	0.9051	0.922
b3_amp3	1.1315	1.1985
vbase	1.4126	1.481
b5_amp1	0.2575	0.2535
b4_amp2	1.5077	1.5176
b2_amp3	0.2424	0.2024

DC Current:

Measured : 204 mA
Simulated : 238 mA

DC Levels for Input and Output Nodes:

Channel	Input (V)	Output (V)
1	0.685	1.637
2	0.684	1.648
3	0.683	1.649
4	0.684	1.631
5	0.684	1.625
6	0.684	1.652
7	0.685	1.641
8	0.685	1.626
9	0.686	1.653
10	0.686	1.629
11	0.686	1.643
12	0.686	1.638
13	0.689	1.633
14	0.688	1.631
15	0.687	1.629
16	0.689	1.651
17	0.689	1.62
18	0.688	1.627
19	0.688	1.631
20	0.688	1.638
21	0.688	1.609
22	0.688	1.629
23	0.687	1.626
24	0.687	1.64
25	0.687	1.604
Std. Dev	1.8E-3	12.4E-3
Mean	0.68644	1.6336

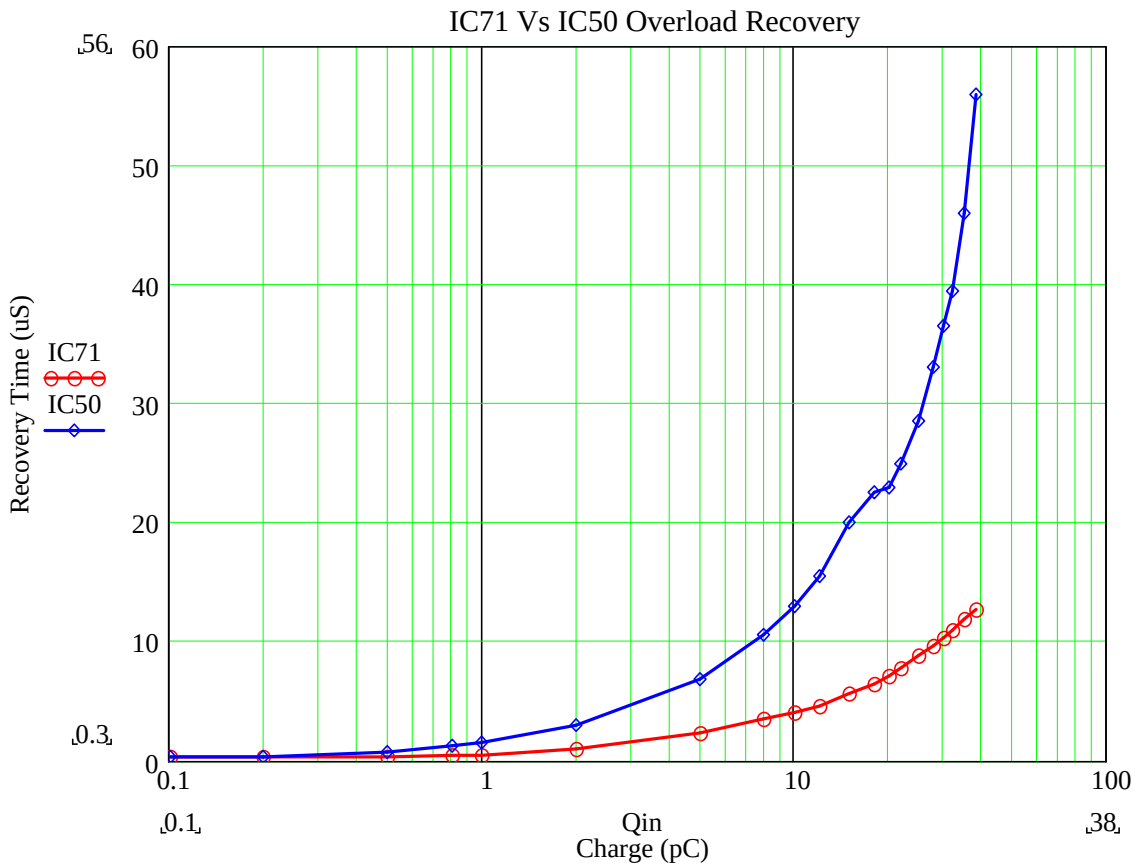
Gain, Shaping Time and ENC

Qinj 268.69 fC

Channel	Vout (mV)	Ts (nS)	Gain (mV/fC)	Noise (mV)	ENC (electrons)
1	1112	77	4.14	0.98	1478
2	1116	76	4.15	0.98	1473
3	1124	76	4.18	0.99	1477
4	1132	76	4.21	1	1482
5	1128	76	4.20	0.98	1457
6	1128	76	4.20	0.98	1457
7	1136	77	4.23	0.98	1447
8	1128	77	4.20	0.97	1442
9	1140	76	4.24	0.98	1442
10	1148	76	4.27	0.97	1417
11	1112	76	4.14	0.97	1463
12	1128	76	4.20	0.96	1427
14	1136	76	4.23	0.97	1432
15	1124	76	4.18	0.96	1432
16	1140	77	4.24	0.97	1427
17	1136	77	4.23	0.98	1447
18	1124	76	4.18	0.97	1447
19	1136	76	4.23	0.98	1447
20	1140	75	4.24	0.99	1456
21	1128	77	4.20	0.98	1457
22	1120	76	4.17	0.99	1482
23	1144	77	4.26	1	1466
24	1156	76	4.30	1	1451
25	1136	76	4.23	1	1476
	Std.Dev	0.53	0.04		18.69
	Mean	76.25	4.21		1453.49

Overload Recovery Time

	Trecovery (uS)	
Qovl (pC)	IC71	IC50
0.1	0.33	0.3
0.2	0.34	0.32
0.5	0.38	0.76
0.8	0.46	1.26
1	0.48	1.5
2	0.96	3
5	2.30	6.8
8	3.50	10.6
10	4.00	13
12	4.62	15.5
15	5.60	20
18	6.50	22.5
20	7.10	23
22	7.80	25
25	8.80	28.5
28	9.70	33
30	10.25	36.5
32	11.00	39.5
35	11.90	46
38	12.70	56



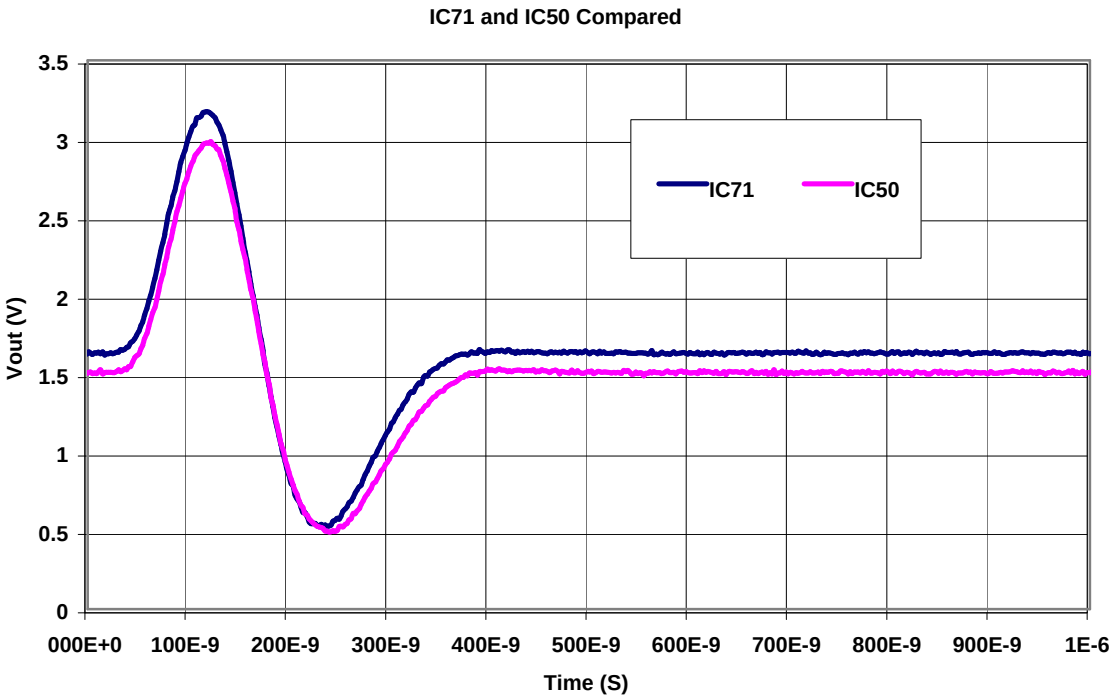
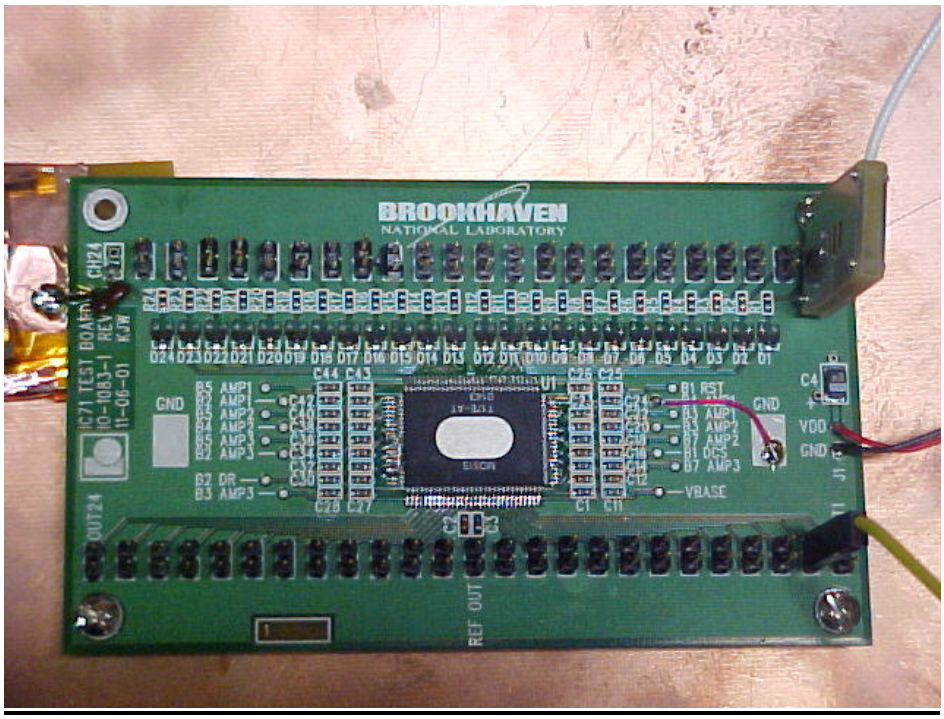
Crosstalk

Preliminary measurements indicates On-Chip cross talk to be around 0.3%

Yield:

Yield analysis to be completed

IC71 and IC50 output waveform



IC71 Test Board